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REMARKS

An excess claim fee payment letter is submitted herewith for four (4) excess total claims.

Claims 1-39 are all the claims presently pending in the application. Claim 4 is amended merely to make an editorial change. Claim 24 is amended to define more clearly the features of the present invention. Claims 36-39 are added to provide more varied protection for the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-35 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Huberman (U.S. Patent No. 6,115,718).

This rejection is respectfully traversed in the following discussion.

I.   THE CLAIMED INVENTION

In an illustrative, non-limiting aspect of the invention, as defined, for example, by independent claim 1, a method of predictive directional Web caching includes detecting a first document accessed by a user and predicting a subsequent document which, with a highest degree of probability, is likely to be retrieved based on the first document accessed.

Independent claims 24 and 32-35 define other exemplary aspect of the invention, which are somewhat similar to independent claim 1.

In conventional web navigation methods, finding the most relevant document is somewhat cumbersome and difficult. For example, as shown in Figure 2 of the present application, on the search result page, the searched results are ordered according to their search score, with the highest being shown on the left hand side and sliding to the lowest across the page to the right hand side. In Figure 2, L1-L12 are links and D1-D10 are documents. As can be seen in Figure 2, finding the most relevant document D10 using conventional web navigation methods is time consuming (e.g., see specification at page 8, lines 17-24).

That is, a user always must traverse *links* to search pages. A common problem is that after a search is input and the results are returned, the user goes through each page (document) one-by-one. However, if the user loses the list by, for example, traversing through a plurality of pages by following links on each page, then the user must back up and must return to a top page (link). Thus, for example, after traversing D6, the user must return to the top (the search results page) and then go to link L2. It is noted that going through the documents under link L2, document D5 will be accessed twice by traversing the links under link L1 or under link L2. The operator then returns to the top and accesses link L3 and so forth, until document D10 is finally found. Thus, the conventional web navigation pattern is slow and time-consuming (e.g., see specification at page 9, lines 1-12).

The present invention, on the other hand, provides a method for the predictive caching of data that can be used to reduce the latency with which documents can be retrieved from remote systems, such as the World Wide Web and databases (e.g., see specification at page 10, lines 18-21). The exemplary method can make an estimate of which documents or data blocks are most likely to be visited by a certain human researcher, given that a number of documents and data blocks have already been retrieved by the user, in a given order. The exemplary method can

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employ the knowledge of the order with which previous documents have been retrieved, and can

make a <u>spatial interpolation</u> which indicates which documents are most likely to be retrieved

next. The <u>data caching method continuously sends</u> to the client machine <u>the documents which</u>

<u>are most likely to be accessed next</u> (e.g., see specification at page 11, lines 7-15).

Thus, with the exemplary aspects of the claimed invention, <u>data can be predictively</u>

<u>cached to reduce the latency with which documents can be retrieved</u> from remote network

systems, such as the World Wide Web and databases (e.g., see specification at page 11, lines 16-

18).

II.   THE PRIOR ART REJECTION

Claims 1-35 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Huberman

(U.S. Patent No. 6,115,718).

The Examiner alleges that Huberman discloses all of the features of claims 1-35.

However, for at least the following reasons, Applicants respectfully disagree with the Examiner's

position. Therefore, Applicants respectfully <u>traverse this rejection</u>.

Independent claim 1 recites, *inter alia*, a "method of <u>predictive directional Web caching</u>,

comprising:

> detecting <u>a first document accessed</u> by a user; and
> <u>predicting a subsequent document</u> which, with a highest degree of
> probability, is likely to be retrieved <u>based on the first document accessed</u>"
> (emphasis added).

With respect to independent claim 1, the Examiner states that claim 1 stands rejected for

the same reasons as independent claim 24. That is, the Examiner alleges that *"Huberman*

discloses a method of predicting a next item in a database, to be requested by a user (i.e.,

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indicates a probability that a user will access a document <u>*during the course of browsing the*</u>

<u>*collection of linked documents*</u>*; col. 2, lines 14-25; the "law of surfing" provides* <u>*a model of user*</u>

<u>*traversal behavior*</u> *in the document collection by indicating* <u>*a probability that the user will*</u>

<u>*traverse to a next document*</u>*; col. 2, lines 44-47; identify "relevant" documents to one currently*

being viewed; col. 3, lines 20-29)" (see Office Action at page 2, numbered paragraph 4;
emphasis added).

The Examiner also alleges that Huberman discloses "*sensing a first item requested by a*

user (i.e., web page currently being viewed (sic); col. 1, line 48) and applying a likelihood

function to predict a second item to be requested by the user (i.e., the "law of surfing" provides

<u>*a model of user*</u> <u>*traversal behavior*</u> *in the document collection by indicating a probability that the*

user will traverse to a next document; col. 2, lines 44-47; indicates a probability that the user

will access a document during the course of browsing <u>*the collection of linked documents*</u>*; col. 2,*

lines 14-25; identify "relevant" documents to one currently being viewed; col. 3, lines 20-29; the

"Recommend" feature provides a list of related web pages that a user may want to retrieve and

view based on the web page that they are currently viewing; col. 1, lines 46-48)" (see Office

Action at page 2-3, numbered paragraph 4; emphasis added).

Additionally, with respect to independent claim 1, the Examiner alleges that Huberman

discloses "*predicting a subsequent document which, with a highest degree of probability, is*

likely to be retrieved based on the first document accessed (i.e., most relevant is an indication

that it has a high likelihood to be of interest to someone viewing the document...identify

"relevant" documents to one currently being viewed; col. 3, lines 20-29; the "law of surfing"

provides <u>*a model of user*</u> <u>*traversal behavior in the document collection*</u> *by indicating a*

probability that the user will <u>*traverse*</u> *to a next document; col. 2, lines 44-47; indicates a*

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probability that a user will access a document <u>during the course of browsing the collection of</u>

<u>linked documents</u>; col. 2, lines 14-25; the "Recommend" feature provides a list of related web

pages that a user may want to retrieve and view based on the web page that they are currently

viewing; col. 1, lines 46-48)" (see Office Action at page 2-3, numbered paragraph 4; emphasis

added).

However, Applicants respectfully submit that Huberman, including the *"law of surfing"*

does <u>not</u> disclose or suggest all of the features of the claimed invention. That is, the claimed

invention is very different than, for example, the *"law of surfing"* described by Huberman.

For example, independent claim 1 provides a "method of <u>predictive directional Web</u>

<u>caching</u>" that can be used <u>to reduce the latency</u> with which documents can be retrieved from

remote systems, such as the World Wide Web (e.g., see specification at page 10, lines 18-21).

Huberman, on the other hand, does <u>not</u> relate to a "method of <u>predictive directional Web</u>

<u>caching</u>", as claimed. Instead, Huberman merely discloses a method for predicting the frequency

of document access <u>in a collection of *linked*</u> documents. That is, Huberman indicates a

probability that a user will access a document <u>during the course of browsing the collection of</u>

<u>*linked* documents</u> (e.g., see Huberman at column 2, lines 14-25; emphasis added).

In contrast, the present invention, as defined for example by independent claim 1,

determines the <u>relevance of Web pages</u>, which is very different than the *"law of surfing"*

described by Huberman.

For example, the claimed method is <u>not</u> restricted to the *<u>linkage</u>* pattern of the World

Wide Web. Instead, the claimed method of predictive directional Web caching provides <u>spatial</u>

<u>document navigation</u> (e.g., see specification at page 29, lines 12-15; see also, for example,

dependent claims 2 and 5-7).

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Indeed, the claimed invention is <u>not</u> limited to the sequence in which documents are

traversed by the user, but instead, retains a memory of a sequence in which documents are

traversed by <u>any given user</u>, as defined, for example, by dependent claim 8.

The exemplary method also can make an estimate of which documents or data blocks are

most likely to be visited by a certain human researcher, given that a number of documents and

data blocks have already been retrieved by the user, in a given order, as defined, for example, by

dependent claims 9-11. The exemplary method also can employ the knowledge of the order with

which previous documents have been retrieved, and can make a spatial interpolation which

indicates which documents are most likely to be retrieved next, as defined, for example, by

dependent claims 12 and 13. The data caching method continuously sends to the client machine

the documents which are most likely to be accessed next, as defined, for example, by dependent

claim 4.

Thus, with the exemplary aspects of the claimed invention, <u>data can be predictively</u>

<u>cached to reduce the latency with which documents can be retrieved</u> from remote network

systems, such as the World Wide Web (e.g., see specification at page 11, lines 16-18).

That is, consider a researcher who is interested in the Space Shuttle, as exemplarily

described in the present application. Assume that there exists a page having an article (text) on

the Space Shuttle Project and on that page there is a link to a picture (image) of the launching of

the Space Shuttle, and it has been discovered that almost all users (e.g., 99%) have accessed the

picture (clicked on the link) of the launch after having first opened the first page (e.g., the

article). By knowing this information (e.g., that the probability is extremely high that the launch

image will be opened by users having first accessed the text article), according to the claimed

invention, <u>the server can cache the picture of the Shuttle launch in advance and in anticipation of</u>

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the user wanting to view this image, based on the user having first opened the page having the
article on the Space Shuttle. That is, according to the claimed invention, the server caches the
launch image while the user is reading the article on the Space Shuttle, thereby reducing any
client side latency and instantly displaying the launch image as soon as the user clicks on the
launch image. Such an image can be stored in the buffer memory of the client side. Thus, there
is substantially no wait (e.g., no latency) on the client side (e.g., see specification at page 33,
lines 1-18).

    In comparison, conventional browser may include a cache and the browser may keep a
history of the previous 10-15 accesses. However, the claimed invention clearly differs from the
simple caching by the browser of the conventional methods in that the claimed invention
predicts, based on a user's opening of a first page, which page or pages will most likely be
opened next by the user (e.g., see specification at page 33, lines 19-23).

    Thus, according to the claimed invention, the method of predictive directional Web
caching can reduce the latency with which documents can be retrieved from remote systems,
such as the World Wide Web.

    For the foregoing reasons, Applicants respectfully submit that Huberman clearly does not
disclose or suggest all of the features of the claimed invention, as defined, for example, by
independent claim 1. Moreover, Huberman also does not disclose or suggest the additional
features recited by dependent claims 2-23. Accordingly, the Examiner is requested to withdraw
the rejection of these claims.

    Somewhat similarly, independent claim 24 recites, *inter alia*, a method of predictive
caching of a next item in a database, to be requested by a user, the method comprising:

        sensing a first item requested by a user; and

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> applying a likelihood function to predict a second item to be requested
> by the user (emphasis added).

Applicants respectfully submit that independent claim 24 is patentable over Huberman at least for somewhat similar reasons as those set forth above with respect to independent claim 1. Dependent claims 25-31 and independent claims 33-35 also are patentable over Huberman for somewhat similar reasons as those set fort above.

For at least the foregoing reasons, Applicants respectfully submit that Huberman does not disclose or suggest all of the features of the claimed invention, in as complete detail as recited in the claims. Therefore, Huberman does not anticipate, or render obvious, the claimed invention defined by claims 1-35.

Accordingly, the Examiner respectfully is requested to withdraw this rejection and permit these claims to pass to immediate allowance.

III. NEW CLAIMS

New claims 36-39 are added to provide more varied protection for the present invention. Claims 36-39 should be patentable over Huberman for somewhat similar reasons as those set forth above.

IV. CONCLUSION

In view of the foregoing, Applicants submit that claims 1-39, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

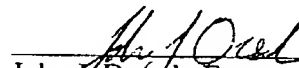Serial No. 09/893,790   20
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Should the Examiner find the application to be other than in condition for allowance, the

Examiner is requested to contact the undersigned at the local telephone number listed below to

discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any

overpayment in fees to Assignee's Deposit Account No. 50-0510.
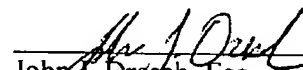
Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I certify that I transmitted via facsimile to (703) 872-9306 the enclosed Amendment

under 37 C.F.R. § 1.111 to Examiner Jungwon Chang on December 13, 2004.

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